

CLAIMS

What is claimed is:



1. An organic electroluminescent (EL) display device comprising:  
a substrate;

an organic EL element formed on said substrate, wherein said organic EL element comprises a lower electrode, an organic EL layer and an upper electrode that are sequentially stacked on said substrate;

a flat panel which encapsulates said organic EL element and is attached to said substrate;

at least one through hole formed in said substrate and/or said flat panel; and

a through hole shutting cap which shuts said through hole.

2. The device of claim 1, wherein said through hole shutting cap comprises a curable agent.

3. The device of claim 1, wherein said through hole shutting cap comprises a welding material.

4. The device of claim 3, wherein the welding material includes one of indium (In) and lead (Pb).

5. The device of claim 1, wherein said through hole controls a pressure inside a space formed by said substrate and said flat panel prior to incorporation of said through hole shutting cap, so as to prevent separation of a portion of said flat panel from said substrate.

6. The device of claim 1, further comprising a moisture/water absorbing agent arranged at a location inside a space formed by said substrate and said flat panel so as to not shield light emitted from said organic EL element, wherein said moisture/water absorbing agent removes moisture/water from the space.

7. The device of claim 6, wherein said flat panel includes a moisture/water absorbing agent reception groove which receives said moisture/water absorbing agent.

8. The device of claim 6, wherein the location is a periphery region of said substrate so as to not shield the light emitted from said organic EL element.

9. The device of claim 6, wherein the location is a periphery region of said flat panel so as to not shield the light emitted from said organic EL element.

10. A method of encapsulating an organic EL display device comprising:  
forming an organic EL element comprising a lower electrode, an organic EL layer and an upper electrode that are sequentially stacked on a substrate;  
coating an adhesive on the substrate and/or the flat panel, wherein the substrate and/or the flat panel comprises a through hole;  
attaching the substrate and the flat panel to each other;  
curing the adhesive at a predetermined temperature; and  
shutting the through hole.

11. The method of claim 10, wherein said shutting of the through holes comprises filling the through hole with a curable agent.

12. The method of claim 11, wherein said shutting of the through hole further comprises welding the through hole filled with the curable agent with a welding material.

13. The method of claim 12, wherein the welding material includes one of indium (In) and lead (Pb).

14. The method of claim 10, wherein said curing of the adhesive comprises curing the adhesive using a UV light.

15. The method of claim 10, further comprising arranging a moisture/water absorbing agent at a location inside a space formed by the substrate and the flat panel so as to not shield light emitted from the organic EL element, wherein said moisture/water absorbing agent removes moisture/water from the space.

16. The method of claim 15, wherein the flat panel includes a moisture/water absorbing agent reception groove receiving the moisture/water absorbing agent.

17. The method of claim 15, wherein the location is a periphery region of the substrate so as to not shield the light emitted from the organic EL element.

18. The method of claim 15, wherein the location is a periphery region of the flat panel so as to not shield the light emitted from the organic EL element.

sub  
a2 > 19. The device of claim 1, further comprising an adhesive which attaches said flat panel to said substrate.

20. The device of claim 19, wherein said through hole regulates pressure inside the organic EL display device prior to sealing of said through hole shutting cap to said through hole, and prevents non-uniform width and separation of said adhesive from said substrate so as to inhibit an inflow of moisture into the organic EL display device.

add  
13 >